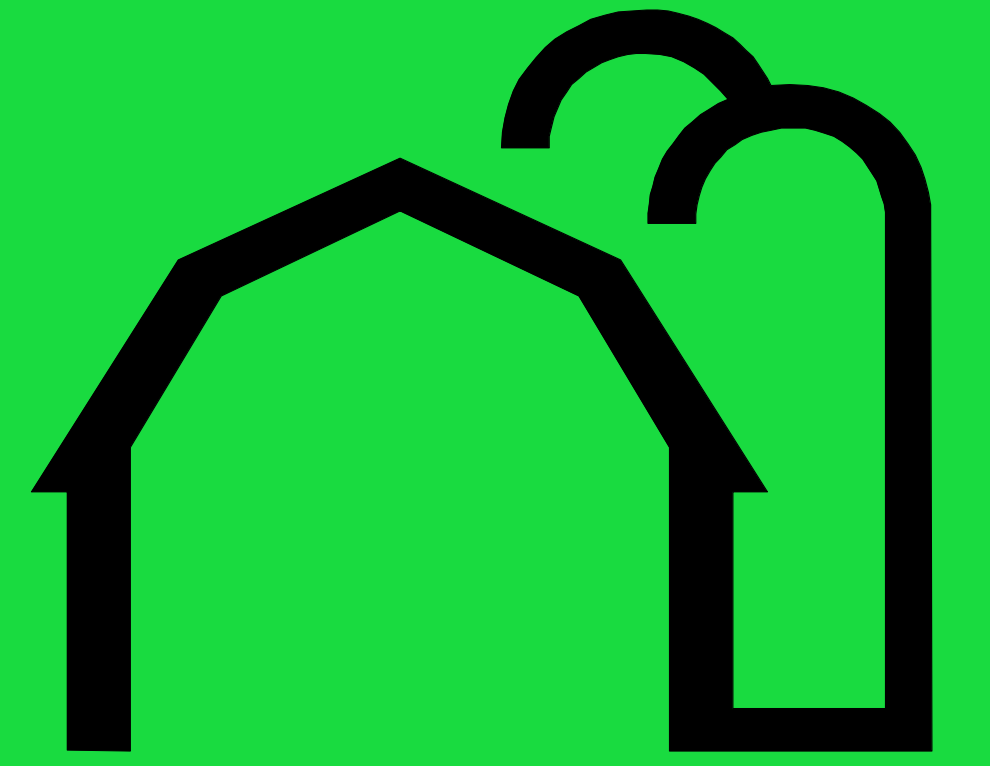


Insect Pest Management in Stored Bulk Grains and Seeds: Reduced Risk-Insecticides and Non-Chemical Controls

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Consequences of Insect Infestation

- . Damage and deterioration in grain
- . Rejections of infested grain
- . Economic costs

Rice Weevil
in Damaged Wheat



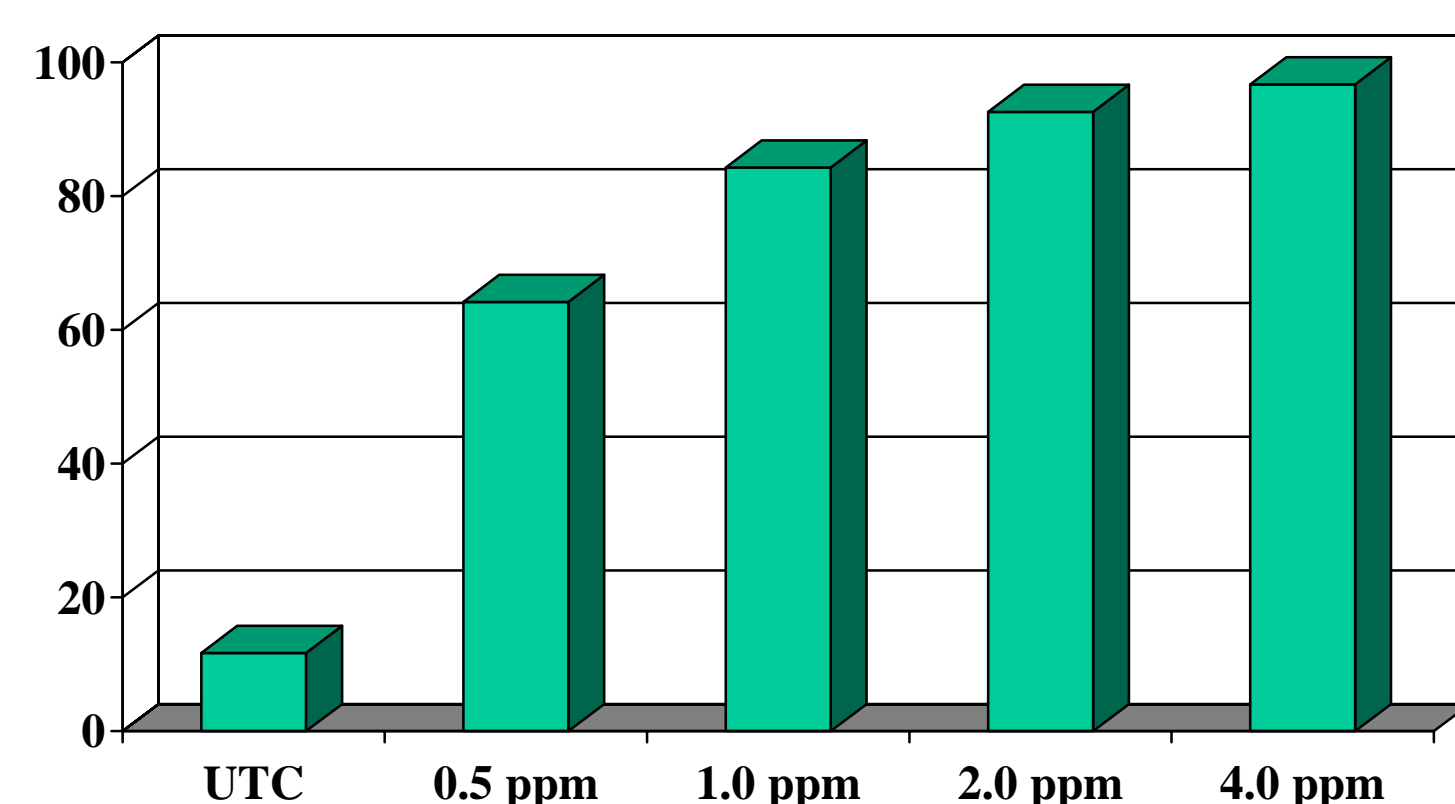
Seed Treatments

Protect stored bagged seed
Research with thiamethoxam (Adage) on corn

Graph illustrates mortality (%) of maize weevils after
3 day exposure to thiamethoxam



Maize Weevil



Please visit our website <http://bru.usgmrl.ksu.edu/arthur> to learn more
about our research on stored-product pests.
Dr. Frank Arthur's email address is arthur@usgmrl.ksu.edu.

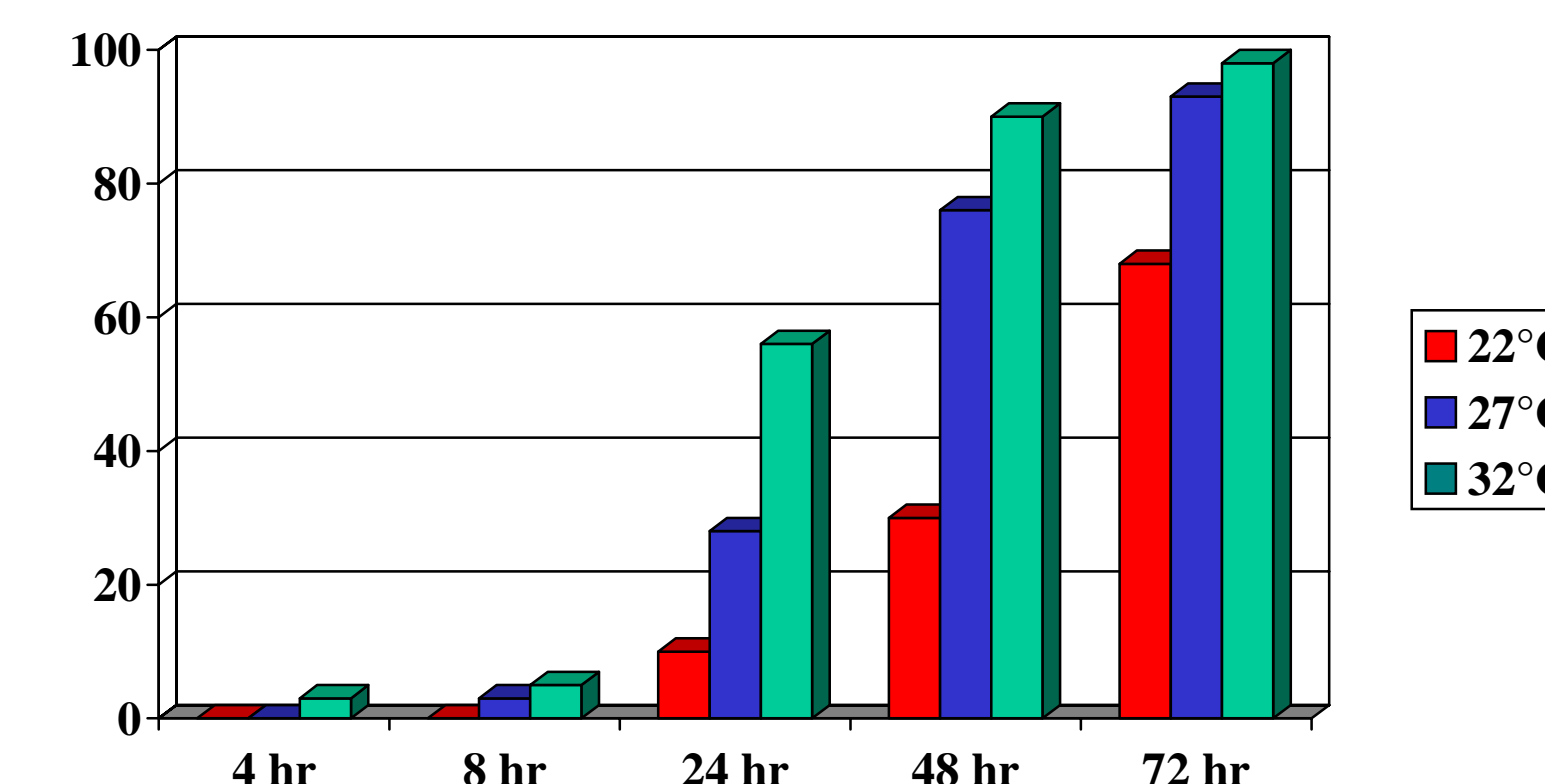
All insect photos are courtesy of the USDA-ARS-GMPRC website.

Insect Control with Reduced-Risk Insecticides

Diatomaceous Earth - Product made with fossilized diatoms, causes desiccation in insects

Tests with Sawtoothed Grain Beetle

- . Application rate of 300 ppm
- . Beetles exposed for 0-72 hours
- . Graph illustrates mortality (%) at three temperatures



Sawtoothed Grain Beetle

Insect Growth Regulators (IGRs) - Prevent development and reproduction of insects

Tests with Lesser Grain Borer and Red Flour Beetle

Exposure for 3 weeks to 1 and 5 ppm S-methoprene and 10 ppm R-methoprene prevented any progeny production in both species.



Lesser Grain Borer



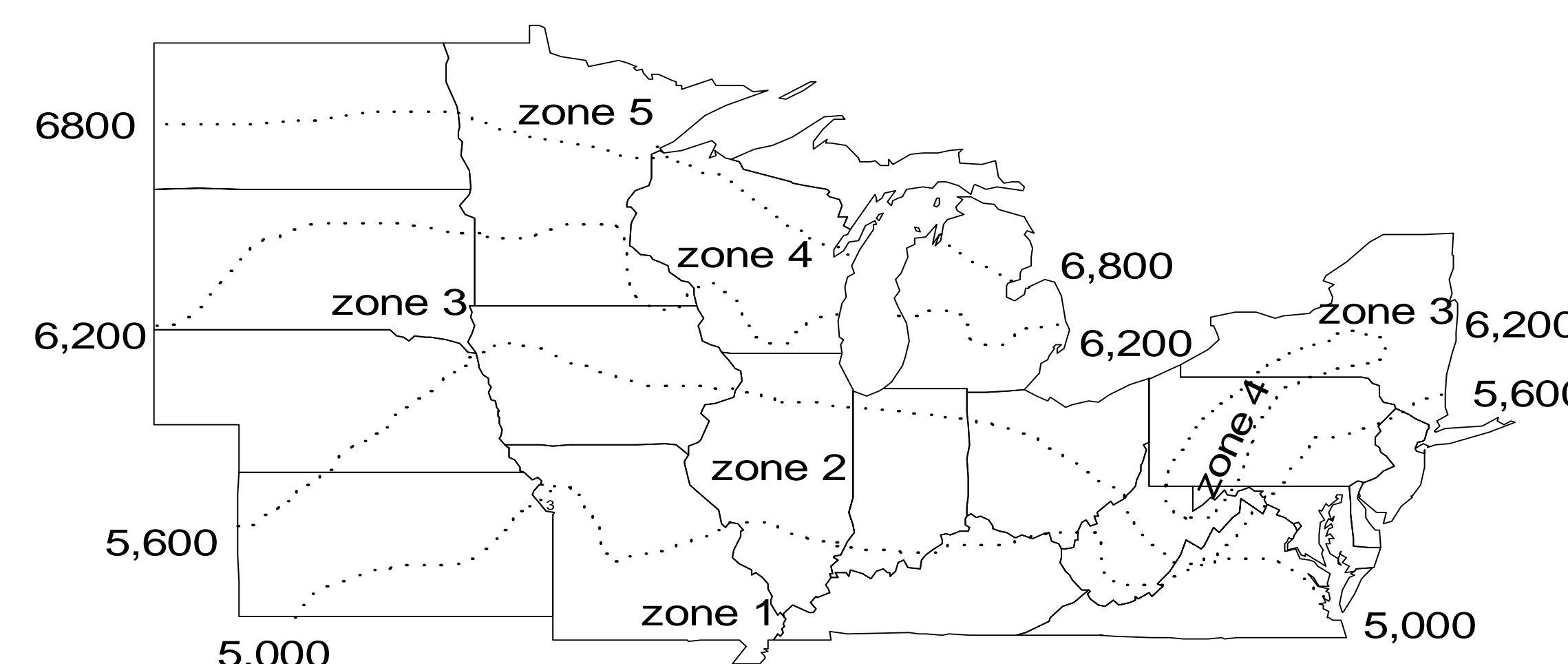
Red Flour Beetle

Non-Chemical Control: Aeration

Aeration is the use of low-volume ambient air to cool grain to 60°F (15°C)
in order to limit insect growth. Weather data can be used to:

Classify large geographic areas

Climatic zones based on yearly hours of temperatures < 15°C



Predict maize weevil populations

